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MONSTER DROP X-TREME

OPERATION MANUAL

PLEASE READ FIRST BEFORE PLUGGING IN MACHINE

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121MAN-01-B

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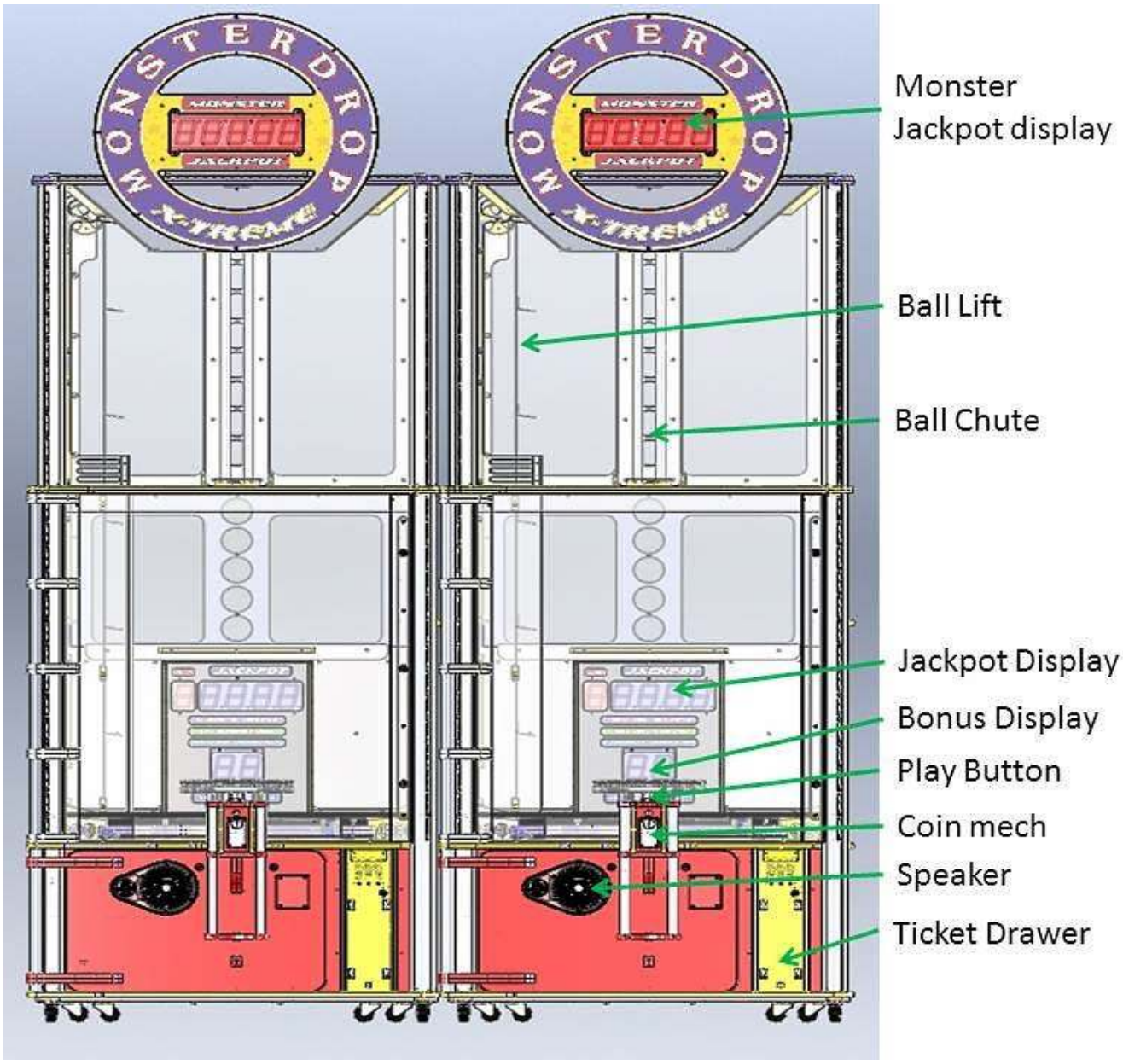
Manual Revision History

Revision A-01/20/11-Release to Production

Revision B-0420/2012-

- Page 7-Added ball count in ball box to parts list
- Page 13-Updated ‘Ball Lift Operation’ description
- Page 9-Add ’9 balls per side’ to Assembly Instructions
- Page 28-Add ‘Wrong number of balls’ to troubleshooting guide

1-Basic Components



2-Game Setup

Unloading Machine

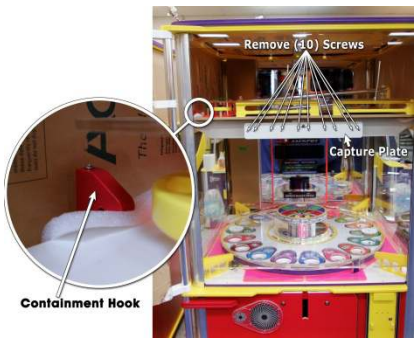
*Notes:

- The following instructions must be duplicated for each cabinet side.
- 'A' side cabinet contains circuit boards in the lower cabinet while 'A' side cabinet contains no circuit boards in the lower cabinet.

1. Carefully remove packing material and unload machine from pallet
2. Remove parts from top of machine
    a. Remove 8 Hex Bolts that attach parts to the Corner Extrusions (2 in each corner).
    b. Carefully remove parts from the top. The Lower Cabinet Top (lower yellow part that holds the upper end of the front door hinge tube) remains in place
        i. There are (7) parts that should be removed from the top. The Upper Cabinet Top (purple/white), Upper Cabinet Base (yellow), (2) Upper Cabinet Top Panels (clear plexiglass), (2) Top Mirror Sides, and a Top Mirror Front

3. Remove (2) upper side glass pieces by sliding up and out

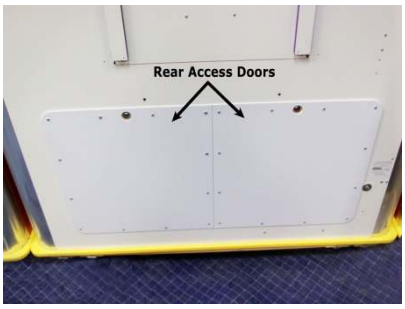
4. Open upper front door to access parts for assembly
5. Remove (10) screws from Capture Plate to access Extruded Corners and remove corners by sliding out the front
6. Remove (5) containment hooks holding flat parts and assemblies in place.
    a. *Tip: These may be difficult to access. You can turn them 90 degrees to free the parts and remove them later.

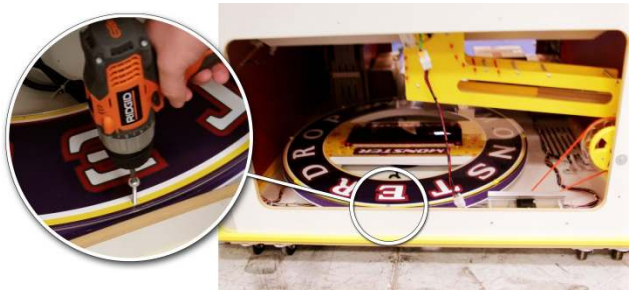


7. Remove flat parts and assemblies (Upper cabinet back assembly, upper cabinet front window, (2) upper cabinet side windows)
8. Remove packing support ribs.
9. Remove Console
    a. Open lower front door and slide console out of the front of the cabinet
    b. Remove (2) screws attaching the Console to the Cash Box Top
10. Remove (3) boxes from inside of lower B side cabinet. There is a box containing the 'Game Balls', one containing the 'Lift Belts', and one containing the hardware

11. Remove coin chute
    a. Open lower front door of the 'A' side cabinet
    b. Remove screws attaching coin chutes to inside right side of cabinet
    c. Remove coin chutes

12. Remove the Marquee Assembly from bottom of cabinet
    a. Open the two Rear Access Doors
    b. Remove the screw that attaches Marqee to the inside of the cabinet
        i. After removing, replace screw in Marquee for later use
    c. Remove Marquee



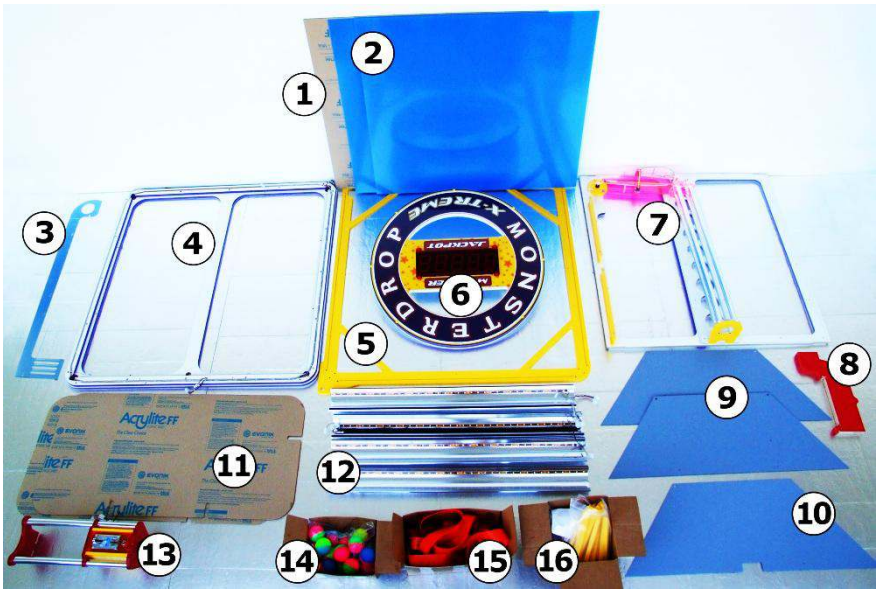


Parts for One Side Top Assembly

① Upper Cabinet Front Window
② Upper Cabinet Side Window (2)
③ Upper Cabinet Front Ball Lift
④ Upper Cabinet Top
⑤ Upper Cabinet Base
⑥ Marquee
⑦ Upper Cabinet Back Assembly
⑧ Coin Chute
⑨ Top Mirror Side(2)
⑩ Top Mirror Front
⑪ Upper Cabinet Top Panels 2x
⑫ Extruded Corners (4)
⑬ Console
⑭ Ball Box
- Play balls (18 balls total)

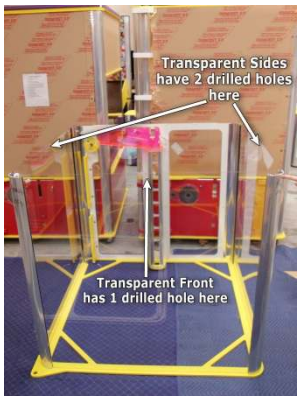
⑮ Lift Belt Box
- (2) Lift Belts

⑯ Hardware Box
- (2) Screw Kits
- (12) Mirror Brackets
- Power Cord
- Ticket Dispenser Oil
- Cable Clamps



Assembly

1. Attach 'Extruded Corners' to 'Upper Cabinet Base'
   a. Use(12) ¼-20x1" flat head screws to attach the 'Upper Cabinet Base' to the (4) extruded corners
   b. Be sure to pay attention to the position of each Extruded Corner as they all have a specific position. The 'Upper Cabinet Left Front Extruded Corner' is located next to the hinge post hole
   c. Extruded Corners should be mounted to the same side of the 'Upper Cabinet Base' that contains the slot cuts
2. Remove protective film or paper from the Right Side Rear Cover of the 'Upper Cabinet Back Assembly'
3. Slide the 'Upper Cabinet Back Assembly' down into the 'Extruded Corners' in the position between the Right and Left Rear Extruded Corners
4. Slide (2) Upper Cabinet Side Windows (contain two drilled holes) down into the Extruded Corners, one on the left side and one on the right side

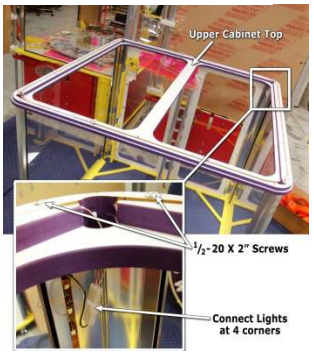


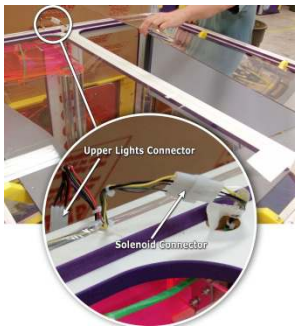
5. Slide the 'Upper Cabinet Front Window' (contains one drilled hole) into the two Front Extruded Corners

6. Attach 'Upper Cabinet Top' to the Extruded Corners-*Tip: This step will be easier if masking tape is used to attach the side glass pieces to the Extruded Corners so that they stay together during assembly

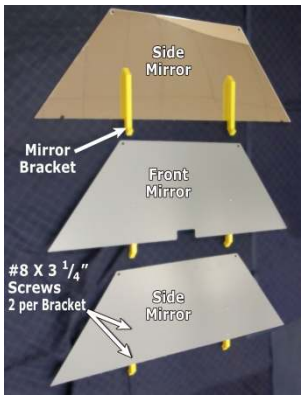
Tape Corners for Easier Assembly

   a. Set 'Upper Cabinet Top' onto the Extruded Corners so that the Side and Front Windows fit into the slot cuts. Position the Top so that the large harness connectors are located at the front right corner
   b. Use(8) ¼-20 x 2" long Phillips Truss Head screws from the screw bag to attach 'Upper Cabinet Top' to the Extruded Corners
   c. Attach Upper Harnesses to Extruded Corner Harnesses by running the connectors on the Upper Harness through the holes in the corners of the 'Upper Cabinet Top' and plugging in.
   d. Connect Solenoid to Upper harness by running the connector through the hole in the 'Upper Cabinet Top' to the Solenoid Harness
   e. Connect Upper Harness to the Upper Lights



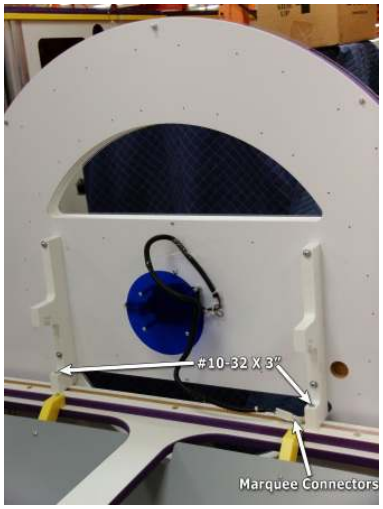


7. Install Mirrors
   a. Peel protective film or paper from the mirrors
   b. Attach (2) 'Mirror Brackets' to each of the (3) mirrors using #8 x 3/4" sheet metal screws
      i. Attach the 'Mirror Brackets' to the mirrored side of the mirrors driving the screws in from the grey colored side

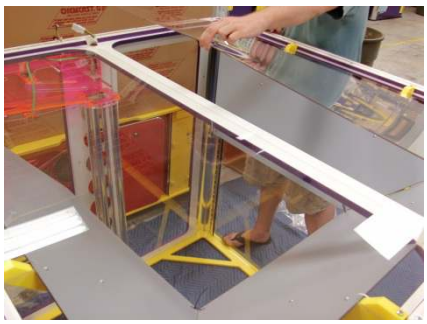


   c. Install 'Top Mirror Front' to the front of the Top Assembly using (2) #10-32 x 1-1/2" machine screws
   d. Install (2) 'Top Mirror sides' to the sides of the top assembly using (2) each #10-32 x 1-1/2" machine screws
   e. Attach mirrors together using cable ties through holes in bottom corners of mirrors

8. Install Marquee
    a. Mount Marquee using (2) #10-32 x 3” machine screws.
    b. Connect harness to marquee.
    c. Remove bag containing Nut and Screw Cap.
    d. Fasten Nut onto Upper Screw on Marquee.
    e. Snap Screw Cap over Upper Screw head.



9. Install (2) Top Glass
    a. Remove protective film and drop into place



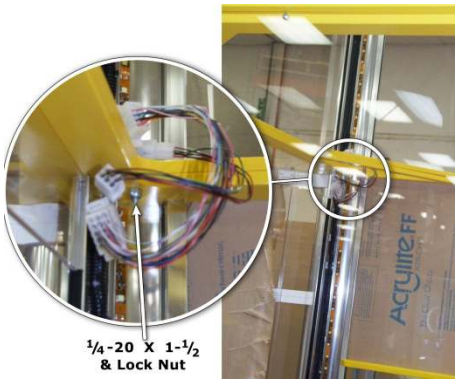
10. Install (2) Upper Side Glass
    a. Slide Upper Side Glass pieces into place
    b. Attach side glass with (6) #8 x ¾” sheet metal screws per side

11. Mount Top Assembly
    a. With one person at each corner of the Top Assembly, lift the Top Assembly and set it on top of the Base Assembly.
    b. Install (4) ¼-20 x 1-1/2” screws and ¼-20 Lock Nuts to secure Top Assembly

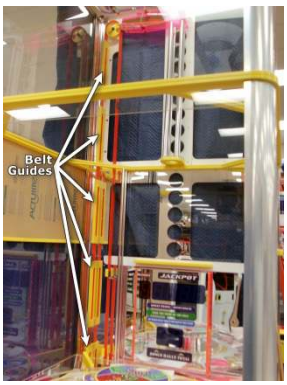
Set Top Assembly onto Base

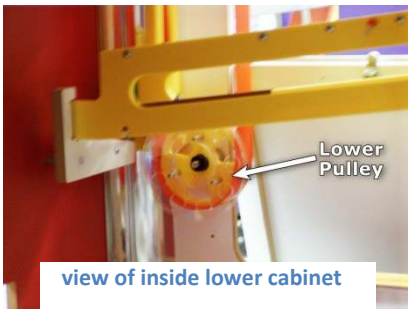
        i. Two of the screws fasten outside the cabinet at the rear corners
        ii. Two of the screws fasten inside the cabinet at the front corners

c. Connect harness at front left inside of machine



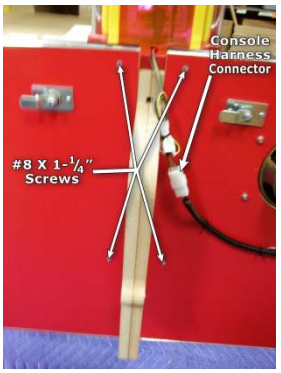
12. Install Lift Belt
    a. Remove Upper Left Rear Cabinet Cover by removing mounting screws
    b. Remove Lower Belt Cover by removing mounting screws
    c. Hang Lift Belt on Upper Pulley and feed belt down into lower cabinet
    d. Stretch Lift Belt over Lower Pulley
    e. Attach Drive Belt between motor and Lower Belt Pulley
    f. 'Snap' belt into channels in Belt Guides
        i. Verify that the Lift Belt runs freely by pulling down on the right side of the belt
    g. Reattach Lower Belt Cover using the screws removed when it was taken down
    h. Attach Upper Belt Cover Using (4) #6 x ¾" sheet metal screws





view of inside lower cabinet

13. Install Console
    a. Attach Coin Chute to Lower Front Door by inserting into slots and pushing down to lock into place
    b. Mount Console using (4) #8 x 1-1/4" screws
    c. Attach Console Harness



14. Attach harness connecting left and right sides of cabinet by running the ‘A’ side harness through a hole in the right rear bottom and up into the left rear bottom of the ‘B’ side cabinet.

15. Connect Power Cord and turn the machine on.
16. Load balls into the wheel holes. Be sure that there are 9 balls per side in the machine (no more, no less) for proper operation

view through rear access door

Payout and Adjustments

*Note: Standard machine assumes 1 cent ticket value. Custom wheel values may be necessary if running anything different.

We recommend running the machine at the default factory settings as a starting point. The cost per play should be four coins at about a quarter value per coin. Adjust as necessary per your location.

Here is how to configure the game for different credit values:

25 cent play

- Jackpot Increment-1
- Jackpot Start Value-100
- Monster Jackpot Increment-1
- Monster Jackpot Start 1000

50 cent play

- Jackpot Increment-2
- Jackpot Start Value-200
- Monster Jackpot Increment-2
- Monster Jackpot Start 2000

One Dollar Play

- Jackpot Increment-4
- Jackpot Start Value-400
- Monster Jackpot Increment-4
- Monster Jackpot Start 4000

Run the game for two weeks to properly average a payout percentage before adjusting anything as the machine may show false payout spikes due to jackpot hot or dry runs over short periods.

To increase the payout, increase the 'Jackpot Increment' setting described in the 'Programming' section. Each increment up will increase the payout by about 4% at $0.25 per play, 2% at $0.50 per play, or 1% at $1.00 per play. Further adjustment can be made by increasing the 'Jackpot Start Value', 'Monster Jackpot Increment', or 'Monster Jackpot Start' values.

To decrease the payout, decrease the 'Jackpot Start' setting described in the 'Programming' section. Though not recommended unless absolutely necessary, further adjustment can be made by decreasing the 'Jackpot Start Value' or 'Monster Jackpot Start' values.

3-Game Play Sequence/Behavior

I. Power-Up Initialization Sequence
   a. Wheel begins spinning, displays and LED's light up, and ball lift may run to fill the ball trough if it needs a ball or balls.

II. Attraction Mode:
   a. Various lights and sounds are triggered at a programmable frequency

III. Adding Money:
   a. "Coin-in" or "bill-in" sound is heard on speaker.
   b. When enough money is added to buy credit(s), the current credits value will be shown on the Jackpot display, and the game will enter Play-Mode

IV. Play Mode:
   a. Play sounds start
   b. Play button flashes

V. Player Hits Button:
   a. Ball drops onto playfield
   b. Ball Lift begins to run to replenish played ball
   c. Ball lift stops when played balls are replenished in the ball trough

VI. Scoring/Payout
   a. Ball drops into hole on wheel or into Monster Jackpot hole
   b. Light and Sound celebration if Jackpot is hit or standard win sound when other value is hit
   c. Game pays appropriate tickets
   d. If player has more credits, the machine will continue on play mode, otherwise the game will go back into Attract-Mode.

4- TECHNICAL OPERATION

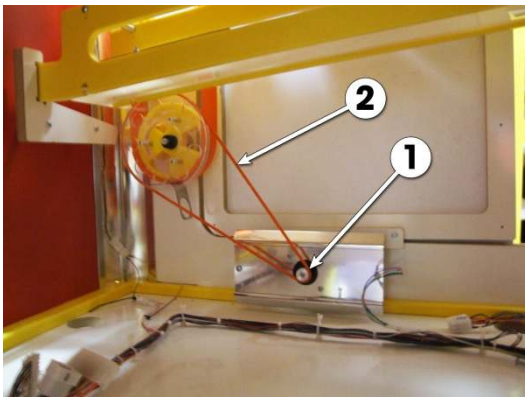
Wheel Location and Ball Scoring

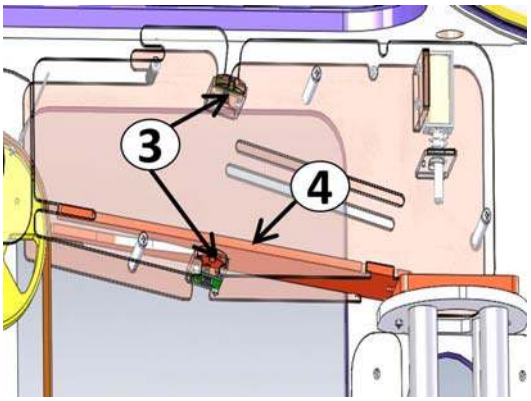
The playfield wheel① is driven by a stepper motor② using a friction drive. There is a tab③ positioned explicitly at the edge of the wheel as a home position. The tab travels through an opto sensor④ mounted to the playfield underneath the wheel once per wheel revolution equating the motor step count to the wheel position. There is an opto sensor pair⑤ (transmit & receive) underneath the playfield⑥ to sense when a ball has fallen through the wheel. These sensors have a short harness connecting to sensor circuit boards⑦ located on the top side of the playfield so that the sensor status can be viewed.

Since the computer knows where the pin in the wheel is relative to each hole position and it knows how many motor steps from home to each hole, we know exactly which hole the ball fell through allowing a payout accurately corresponding to the hole position.

Ball Lift Operation

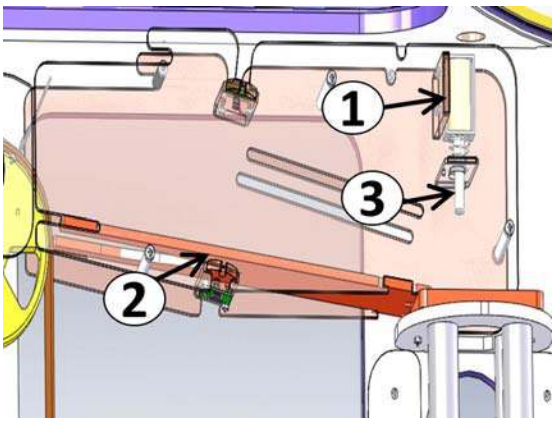
A stepper motor① is connected to the ball lift via a urethane round belt②. There is an opto pair③ (transmitter & receiver) located in the ball trough④ used to sense the loading of a ball. After each play, when a single ball rolls down the trough and past the opto, the ball lift will stop. The ball lift will run after each ball is dropped replenishing the ball in the trough.





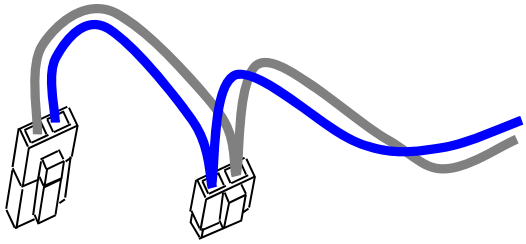
Ball Drop Operation

There is a solenoid① located above the ball trough②. The solenoid plunger③ directly contacts the first staged ball containing it in the trough. When credits are available and the play button is pressed, the solenoid is activated pulling the plunger up and away from the ball allowing it to roll out of the trough, down the ball chute, and into play on the wheel. The plunger returns just after the first ball is cleared in time to block the next staged ball and keep it from dropping until the play button is pressed again.



Inter-Board Communication

The Circuit Boards communicate with each other using a 485 differential wire-pair network, using the SNAP software protocol layer.



- On this machine, this wire pair has colors Blue and Gray.

- The Main CPU Board acts as the master, initiating commands and receiving responses from the slave boards.

- Like-boards differentiate from each other by means of an ID-Switch setting. See the following pages to find each board's ID-Switch location and setting.

- The following board(s) are NOT connected to the 485 network:
  > The Power distribution board.
  > The Opto Sensors.

-Note that the 485 network wire-pair chain jumps from board to board:

> In some places the chaining is done by double-crimps at the connector (these are usually 2-pin connectors)

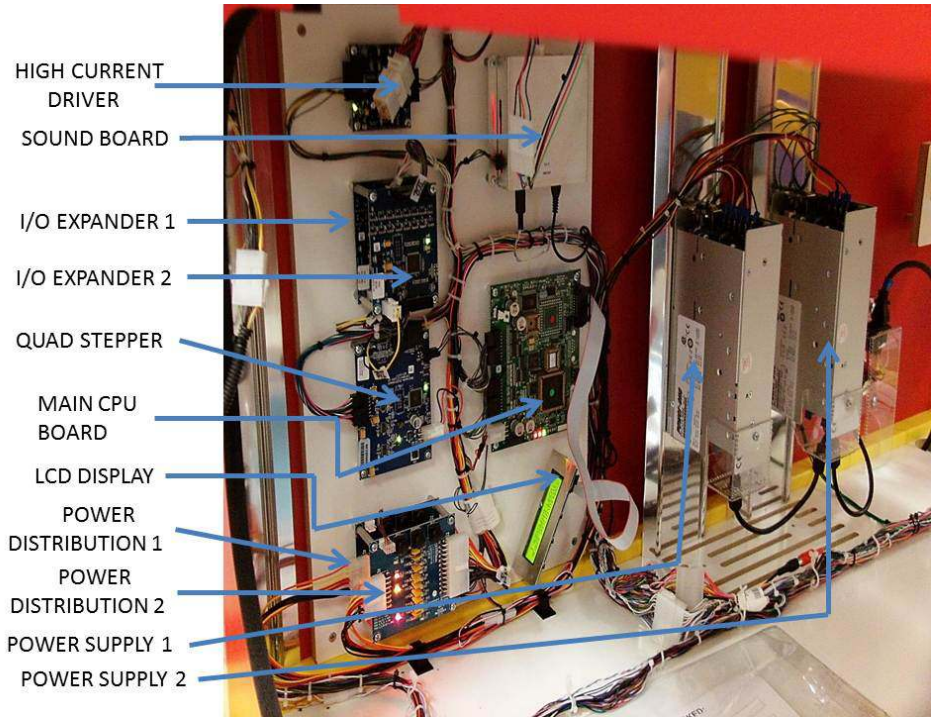
>In other places, PCB traces on the board itself carry the chain from a pair of connector pins to the next (usually a four-pin connector); thus, disconnecting such a board's 485 might actually disconnect the rest of the 485 chain. Keep this in mind when troubleshooting or replacing parts.

-485 Communication network chain:

Main CPU
↓
Ticket dispenser connector
↓
Quad Stepper
↓
IO-Expander-1
↓
Sound Board
↓
Playfield Player 1
↓
Playfield Player 2
↓
Monster Jackpot Marquee

Main Electronic Components

Circuit Board Locations

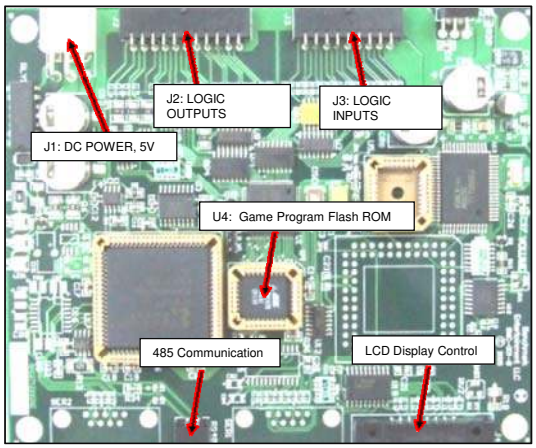


The view inside the game with the lower door open.

Electronics and Descriptions

Main CPU Board

Part# PCB10002
Location: Inside lower cabinet
ID-Switch setting: None, this is the master board.



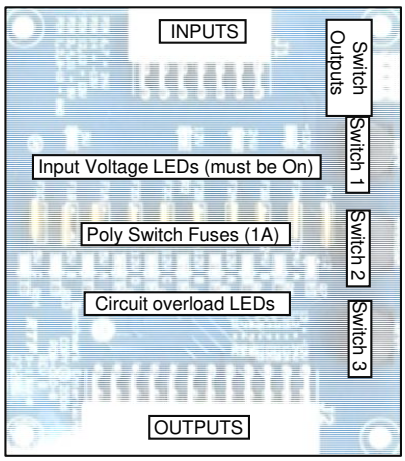
This board is the main controller of the game. It decides all the game actions and commands the other boards to act according to the game scheme.

Communication to the other boards is performed via a 485 differential wire-pair (Gray and blue wires).
The 'Programming Mode' game-settings information is also saved on this board.
The actual Game code resides on the removable Flash-Rom chip (U4); this chip can be replaced/upgraded if necessary (Using a PLCC32 extractor tool).

Main ROM program Version Updates:

Power Distribution Board

Part# PCB17001
Location: : Inside lower cabinet
ID-Switch setting: None, board has no computer.



Distributes DC power from the power-supply to the different devices, through a Poly-Switch (thermal, resettable fuse) for each voltage circuit.
Not that for convenience, the 'Programming Options' Buttons are also located on this board, although they're not power related.

Power is distributed in the following manner (worst case estimations):

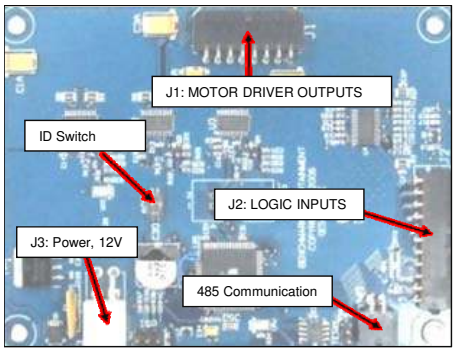
Board/Device	Estimated consumption	Fuse circuit (see board)	
-Quad Stepper Board (main CPU) + 4 Motors	(24V, 3A)	(*24A*)	
-Sound Board (on Top Panel)	(12V, 140mA)	(*12B*)	
-IO-Expander 1 (+Playfield Top Lights)	(12V, 500mA)	(*12C*)	
-IO-Expander 2 (+Playfield Bottom Lights)	(12V, 500mA)	(*12C*)	
-IO-Expander 3 (+Coin/Bill, light-strips)	(12V, 4A)	(*12A* + *12D*)	[3A peak: Bill Acceptor]
- x3 Opto sensors (Trap Door Assy)	(5V, 60mA)	(*5A*)	
- x2 Opto sensors (Claw Assy) + Credits Display	(5V, 160mA)	(*5B*)	

Related Note:
Note: There are 2 AC fuses on the Power supply group (10Amp, 250 V). They're found inside of the ICE-C13 receptacle on the power supply.

Quad Stepper 1

Part# PCB11006
Location: : Inside lower cabinet
ID-Switch setting: **00** (off-off)

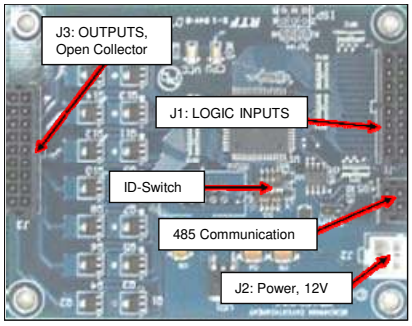
This Stepper-motor controller board handles the movements of the two wheel motors and the two ball lift motors.



IO-Expander 1

Part# PCB14008
Location: : Inside lower cabinet
ID-Switch setting: **0100** (off-on-off-off)

Handles all LED's located in the two main cabinet areas (all except marquee LED's and RGB LED's)



IO-Expander 2

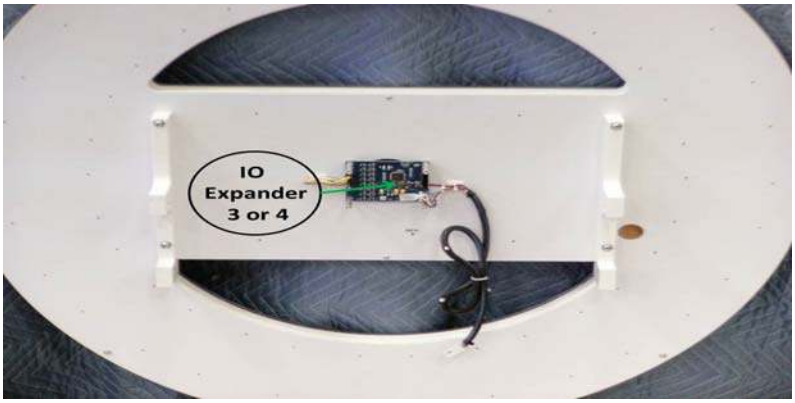
Part# PCB14008
Location: Inside lower cabinet
ID-Switch setting: 0**000** (off-off-off-off) NA Hard Coded for RGB LEDs

Handles the RGB LED Chase Lighting

IO-Expander 3

Part# PCB14008
Location: Inside Player 1 Marquee
ID-Switch setting: 0**000** (off-off-off-off)

Handles the LED's in the player 1 Marquee.



IO-Expander 4

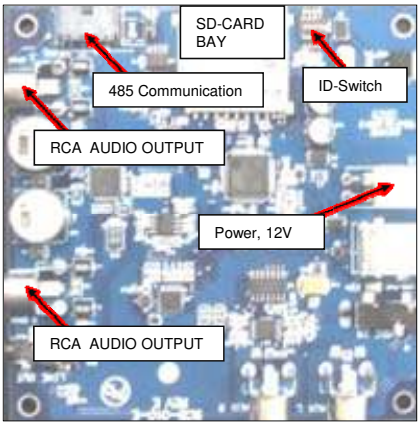
Part# PCB14008
Location: Inside Player 2 Marquee
ID-Switch setting: 1**000** (on-off-off-off)

Handles the LED's in the player 2 Marquee.

Sound Board

Part# PCB041
Location: : Inside lower cabinet
ID-Switch setting: **0000** (off-off-off-off)

Handles background and event sounds.
Sound files are stored on the plug-in SD-card memory board.



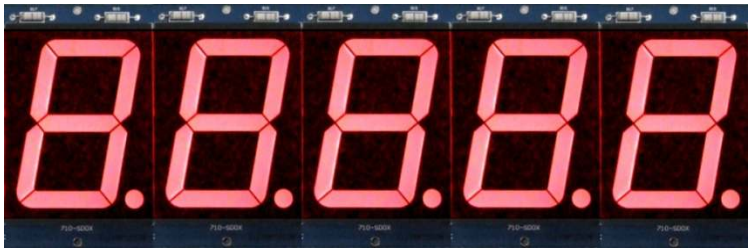
Opto Sensors

Part# PCB009 [Right Angle Connector]
Location: Underneath playfield wheel
Qty: x4
ID-Switch setting: None, it has no 485 communication.
It detects the wheel home position and the ball through the wheel.

Notes:
This sensor board has a Green LED that lights up when the IR beam is interrupted.
The two ball-sense signals go to the Quad stepper Board Inputs, J2 connector

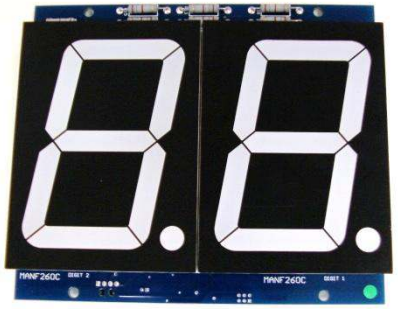
Large 5-Digit Display

Part# PCB033
Location: (2) Inside play area mounted to back panels & (1) Inside Each Monster Jackpot display assembly
Qty: 3 (1 for Jackpots Player 1 and Player 2 & 1 for Monster Jackpot)
ID-Switch settings:
Jackpot/Credits Display Player 1: **000000** Jackpot/Credits Display Player 2: **010000**
Monster Jackpot Display Player 1: **001000** Monster Jackpot Display Player 2: **101000**
The ID-Switch is located on the back of the Display and is labeled as “S1”.



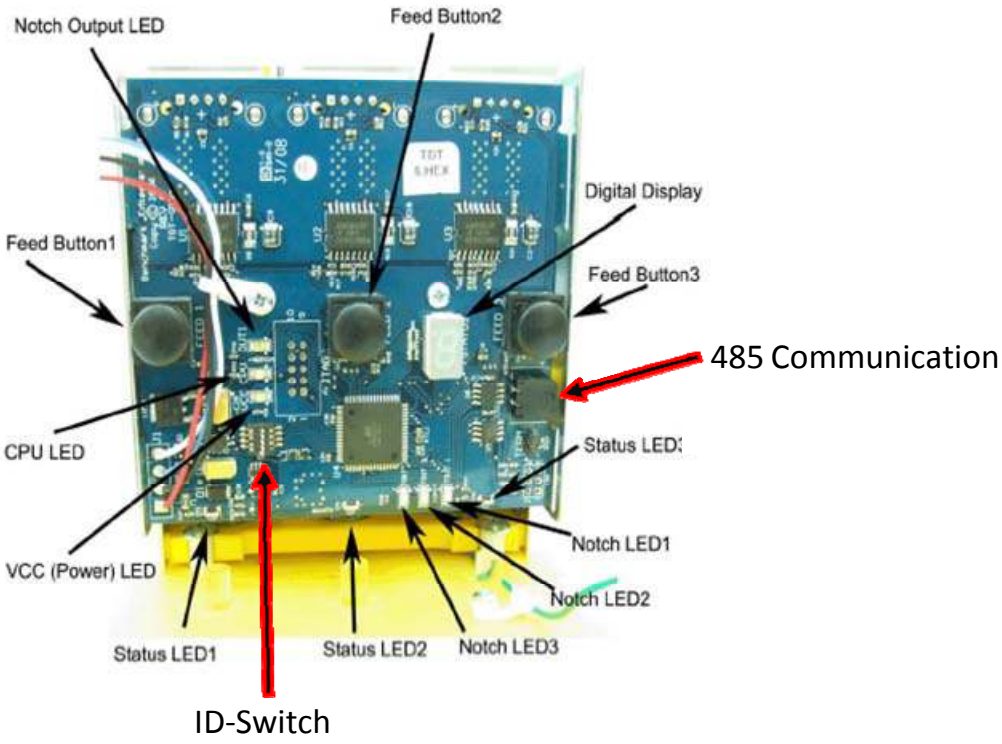
Large 2-Digit Display

Part# PCB034
Location: (2) Inside play area mounted to back
Qty:2 (1 each for Bonus Balls Player 1 and Player 2)
ID-Switch settings:
Bonus Balls Display Player 1: 1**00000** Bonus Balls Display Player 2: **110000**
The ID-Switch is located on the back of the Display and is labeled as “S1”.



Ticket Dispensers (Intelli-Triple Series)

Part#
Location: Ticket Side-Doors
Qty: x2 (1 for each player side)
IMPORTANT NOTE: These ticket dispensers for Monster Drop X-Treme DO NOT use the standard "Run" and "Notch" lines to communicate with the main CPU Board; instead, they do it through the 485 comm. network. Because of this, you must be sure these devices have code version TDT 7 or higher (see sticker on PC-Board). They also need to have the proper ID switch settings, as follows.
ID-Switch settings: Player 1: **000000** Player2: **100000**
The Circuit-board and ID-Switch within are part of the Ticket Dispenser device, on the underside.
For more information, see Benchmark's Ticket Dispenser manual.

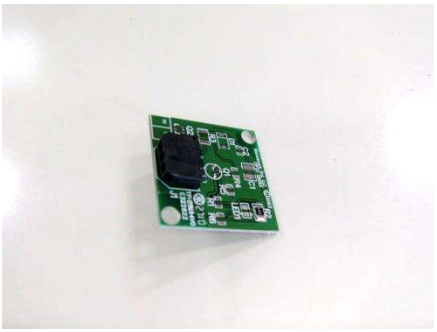


Opto Single Receiver Board (Onboard Receiver)

Part #: PCB021
Location: Ball Trough
Qty: 4 (1 for each playfield and ball drop assembly)
This board mounts to the ball trough. It senses the third staged ball in the ball trough.

Opto Single Transmitter Board (Onboard Transmitter)

Part #: PCB020
Location: Ball Trough
Qty: 4 (1 for each playfield and ball drop assembly)
This board mounts to the ball trough. It senses the third staged ball in the ball trough.



4- PROGRAMMING OPTIONS

Programming the Monster Drop X-Treme Game

Entering Programming Mode

To enter program mode, press the Center Button located on the Power Distribution Board, located inside the left door on the left side of the cabinet. “MONSTER DROP X-Treme V.X.X – PROGRAM MODE” will appear on the LCD Display located inside the cabinet next to the Power Distribution Board.

If there are tickets owed that have not been paid for Game 1 or Game 2, then they will be displayed at this time with the option to clear them. To clear the tickets, depress the Center Button again. If you wish to proceed without clearing the tickets, then depress either the Front or Back Button.

If there are no tickets to be cleared or you have opted not to clear them, then “ENTER PROGRAM MODE?” will be displayed. Depressing the Center Button again will enter the Program Mode. Depressing either the Front or Back Button will revert the game back to Run Mode.

If Programming Mode is selected, then “ENTER PASSCODE” will be displayed with the first digit highlighted with a flashing cursor.

“ENTER PASSCODE”

To be able to change programming parameters or reset the counters, a 4-digit passcode must be entered. The default passcode is 0000. To enter the passcode, depress the Center Button to change the digit from 0 to 9, then press the Front Button to move to the next digit. If you have moved to a new digit and wish to move back to a previous digit, depress

the Back Button. After all digits have been entered correctly and the last digit is highlighted, depressing the Front Button will display the Programming Main Menu.

General Programming Procedure

Once a valid passcode has been entered and the Main Menu is displayed, the Front/Back Buttons scroll Forward/Backward through the programming options. If you wish to change an option, depressing the Center Button enters the highlighted option. The current setting for that option is then displayed.

Once an option is entered, the Front/Back Buttons Increase/Decrease the option value, and depressing the Center Button saves the new value and exits back to the Main Menu. If the Front/Back Button is held and depressed when changing an option, the value will continue to Increase/Decrease.

Description of Programming Options

1 CHANGE PASSCODE

Entering a new passcode is accomplished in the same way as entering the passcode, as previously explained.

IMPORTANT!!! ONCE THE PASSCODE IS CHANGED, THE DEFAULT OF 0000 WILL NO LONGER WORK! BE SURE TO SAVE THE PASSCODE IN A SAFE PLACE!

2 SET CONTRAST

This option sets the contrast for the LCD Display. Depress and hold either the Front or Back Buttons to Increase/Decrease the contrast. Depressing the Center Button returns to the Main Menu.

3 PLAY VOLUME

This option sets the speaker volume during game play. When this option is entered, the game's background music will play continuously. Depressing the Front/Back Buttons will Increase/Decrease the volume. Depressing the Center Button returns to the Main Menu.

4 ATTRACT VOLUME

This option sets the speaker volume during Attraction Mode. When this option is entered, the game's background music will play continuously. Depressing the Front/Back Buttons will Increase/Decrease the volume. Depressing the Center Button returns to the Main Menu.

5 JACKPOT VOLUME

This option sets the speaker volume during a Jackpot Event. When this option is entered, the game's background music will play continuously. Depressing the Front/Back Buttons will Increase/Decrease the volume. Depressing the Center Button returns to the Main Menu.

6 ATTRA. FREQUENCY
This option sets the frequency at which the attraction mode occurs. The settings are from OFF to every 30 minutes, in 1-minute increments. Depressing the Front/Back Buttons will Increase/Decrease the setting. Depressing the Center Button returns to the Main Menu.

7 GAME PRICE
This option sets the number of coins required for a credit. The settings are from 1 to 8 coins per credit. Depressing the Front/Back Buttons will Increase/Decrease the setting. Depressing the Center Button returns to the Main Menu.

8 WHEEL TYPE
This selects one of the existing payout options. **PLEASE NOTE: Changing this from STANDARD requires a new wheel decal!** Depressing the Front/Back Buttons will change the setting. Depressing the Center Button returns to the Main Menu.

9 WHEEL SPEED
This changes the wheel speed from 0 (slowest) to 4 (fastest). Depressing the Front/Back Buttons will change the setting. Depressing the Center Button returns to the Main Menu.

10 JACKPOT INCREMENT
Every time a credit is added to the game, the jackpot value is incremented by this amount. The setting is from an increment of 1 to 50. Depressing the Front/Back Buttons will change the setting. Depressing the Center Button returns to the Main Menu.

11 JACKPOT START VAL
After a Jackpot is won, this is the new starting jackpot value. The values are from 50 to 999 in increments of 5. Depressing the Front/Back Buttons will change the setting. Depressing the Center Button returns to the Main Menu.

12 JACKPOT MAX VAL.
This sets the maximum allowable Jackpot Value. The values are from 50 to 999 in increments of 5. Depressing the Front/Back Buttons will change the setting. Depressing the Center Button returns to the Main Menu.

13 JACKPOT TYPE
The two types of Jackpots are SEPARATE and COMBINED. If the setting is SEPARATE, then the jackpot for each game operates independently from the other. If the setting is COMBINED, then both Game 1 and Game 2 Jackpots will increment if a credit is added to either game, and both jackpots will be reset if either Game wins a jackpot. Depressing the Front/Back Buttons will change the setting. Depressing the Center Button returns to the Main Menu.

14 MONSTER JP INC.
Every time a credit is added to either game, the Monster Jackpot value is incremented by this amount. The setting is from an increment of 1 to 50. Depressing the Front/Back Buttons will change the setting. Depressing the Center Button returns to the Main Menu.

15 MONSTER JP START
After a Monster Jackpot is won, this is the new starting jackpot value. The values are from 500 to 99999 in increments of 50. Depressing the Front/Back Buttons will change the setting. Depressing the Center Button returns to the Main Menu.

16 MONSTER JP MAX
This sets the maximum allowable Monster Jackpot Value. The values are from 500 to 99999 in increments of 50. Depressing the Front/Back Buttons will change the setting. Depressing the Center Button returns to the Main Menu.

17 DISPLAY TICKETS
If this option is ON, then the tickets owed are displayed on the jackpot display, and the display is updated as the tickets are dispensed. If there are no tickets owed, then the Jackpot Value is displayed. Depressing the Front/Back Buttons will change the setting. Depressing the Center Button returns to the Main Menu.

18 MERCY TICKET
The setting for this option are from OFF to 5 tickets. If the setting is OFF, then no tickets are dispensed if the ADD BONUS hole is hit. Depressing the Front/Back Buttons will change the setting. Depressing the Center Button returns to the Main Menu.

19 RESET TOTAL COINS
The TOTAL COINS IN counter can be reset here. Depressing the Front or Back Button will reset the count to 0. Depressing the Center Button returns to the Main Menu.

20 RESET TOTAL TKTS
The TOTAL TICKETS OUT counter can be reset here. Depressing the Front or Back Button will reset the count to 0. Depressing the Center Button returns to the Main Menu.

X LEAVE PROGRAM MODE
Depressing the Center Button returns to Run Mode

DEFAULT SETTINGS

PASSCODE	**0000**
PLAY MODE VOLUME	**20**
ATTRACTION MODE VOLUME	**42**
JACKPOT MODE VOLUME	**MAX**
ATTRACTION FREQUENCY	**5 Minutes**

COINS PER CREDIT	**1 Coin**
WHEEL TYPE	**STANDARD**
WHEEL SPEED	**4**
JACKPOT INCREMENT	**1 Point**
JACKPOT START VALUE	**400**
JACKPOT MAX VALUE	**999**
JACKPOT TYPE	**SEPARATE**
MONSTER JACKPOT INC.	**1**
MONSTER JACKPOT START	**2000**
MONSTER JACKPOT MAX	**99999**
DISPLAY TICKETS OWED	**ON**
MERCY TICKET	**OFF**

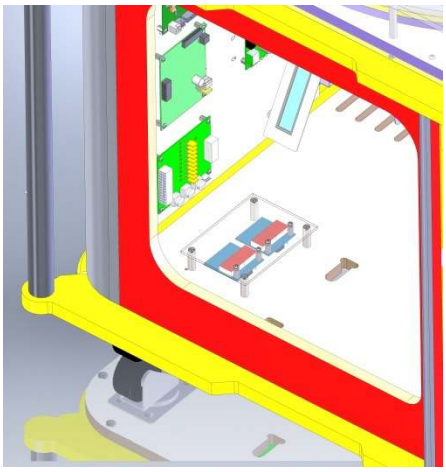
6- ALTERNATIVE TICKETING AND CARD-SWIPE SYSTEM CONFIGURATIONS

There are a few alternative configurations regarding Ticket Dispensers, Card Swipe systems and Electronic Tickets (e-tickets) that are possible to setup, depending on your location. These are described in a general fashion as follows.

CONFIGURATION 1

NON-BENCHMARK GAMES TICKET DISPENSERS (DELTRONICS, etc):

(USES BENCHMARK GAMES' EMULATOR BOARD AS INTERFACE)



The Monster Drop X-Treme machine communicates with the Benchmark Games Ticket dispensers (Intelli-Triple) by means of a serial protocol over a 485 wire-pair physical path (gray and blue wire pair).
If you want to run your system with other manufacturer's Ticket Dispensers, you need to install one of our Ticket Emulator/Interface Boards to translate the communication coming from the 485 wire network into to the standard "Run" and "Notch" signals used by each of your own Ticket Dispensers.

If not already present on the machine, the Emulator/Interface board for each of the 2 stations comes as a complete kit with the harnessing adaptor necessary for installation, (Kit part #105-KIT-005).

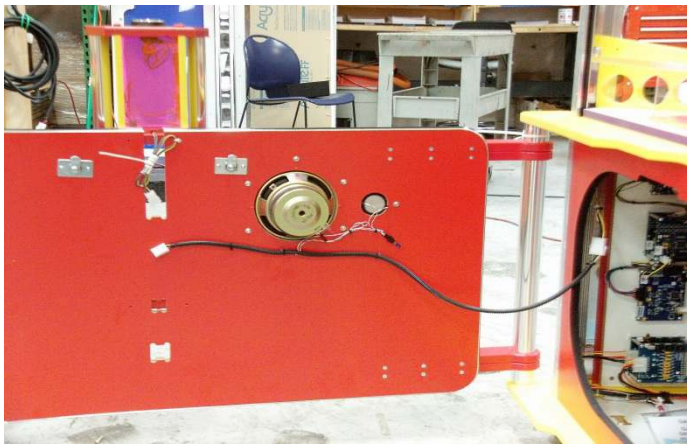
Attach the bracket to the board. Then connect the Emulator bracket harness to the game using the 8 pin microfit connector located above the power distribution board.
Finally, set the Dip-Switch Network ID on each of the interface boards in the same binary fashion as in the large 5-digit displays or the original Intelli-Triples, as follows:
Station 1: off,off,off,off Station 2: on,off,off,off

CONFIGURATION 2

NORMAL CARD SWIPE SET-UP, 1 SWIPE GIVES 1 CREDIT:

(THIS IS INDEPENDENT OF TICKET DISPENSER BRAND INSTALLED).

The card swipe system needs to access the “Credits” signal line to the main CPU board, In order to trigger game-play.



In some installations, the card swipe system is also used for basic accounting purposes, having the device count the “Notch” signal pulses produced by the Ticket Dispenser as it awards tickets. In that case you also need to tap into this “Notch” line.

These two lines are available on pins at the door-hinge connector on each of the 2 player positions. Wires need to be run from the card swipe system to the corresponding mating connector on the door side. (The complete pin-outs and wire colors for each connector are listed on page 28)

Station 1: Credits, pin 5 (Gray/yellow)
Station 2: Credits, pin 5 (Gray/yellow)
Make sure to configure your card-swipe system to provide 1-pulse only for each swipe, with the following constraints:
-Minimum pulse duration: 40mS
-Minimum dead-time before next pulse: 40mS
Also make sure the Monster Drop X-Treme Programming-Mode option “Coins per Credit” is set to 1.

DOOR-HINGE CONNECTOR PIN-OUTS:

CONNECTOR	DEVICE	TYPE	GENDER	WxH		
C7	door connection	Minifit	Female	5 x 2		
PIN	SIGNAL	WIRE COLOR	TO	Gauge	TO	Gauge
1	12v	Yellow	C1-4	18	C17-1	18
2	grnd	Black	C1-16	18		
3	drop ball button	Gry\Blk	C2-3	22		
4	button light	Gry\Blu	C1-12	22		
5	coin in	Gry\Yel	C2-1	22		
6	speaker	Wht\Red\Blu	C2-5	22		
7	speaker	Wht\Blu\Grn	C2-6	22		
8	coin mech enable	Gry\Or	C1-24	22		
9						
10						

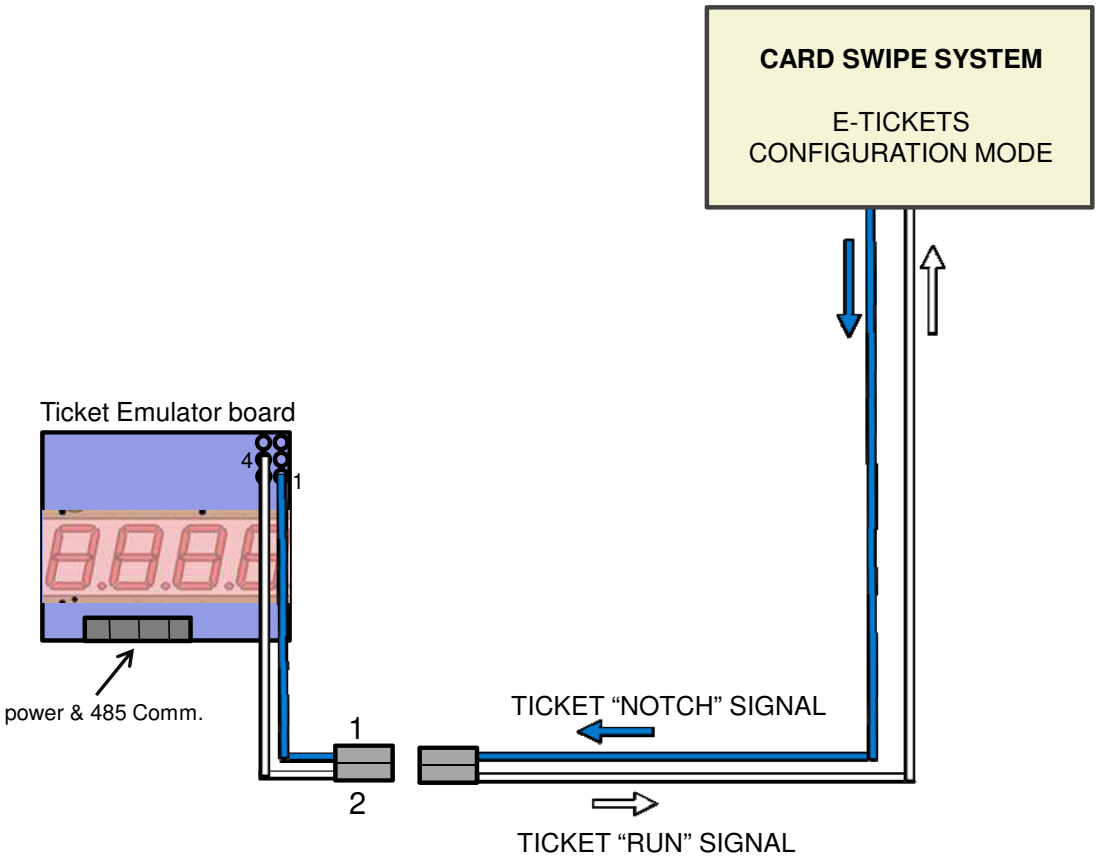
CONFIGURATION 3

CARD SWIPE SYSTEMS, ELECTRONIC-TICKET SCHEME:

(NO TICKET DISPENSER INSTALLED)
(USES BENCHMARK GAMES' EMULATOR BOARD AS INTERFACE)

In most card swipe systems running E-ticket configurations (i.e. Sacoa, etc), the device requires to be fed the standard Ticket "Run" signal in order for it to log the tickets being paid to the player.
As it logs, the card swipe system will put out the standard "Notch" signal pulse for each ticket awarded, in order to behave and be compatible as a regular Ticket Dispenser.

As explained for Configuration 1, the Monster Drop X-Treme machine runs tickets via a 485 network, thus the ticket emulator board is needed for this setup as well, in order to produce the "RUN" signal required by the card-swipe.
Note that the Ticket emulator board also Does require to see the "Notch" signal coming back for it to know that the customer is getting paid; otherwise it will report an "Out of Tickets" condition to the main CPU and the game will throw an E-3 Error.



7- ERROR CODES AND TROUBLESHOOTING GUIDE

ERROR CODES, QUICK SUMMARY

Shown on the corresponding player 5-Digit Display overhead.

Note: Errors are more clearly spelled out on the LCD display on the Control Panel.

ERROR CODES

The following error codes are displayed on the Jackpot Display for each game if an error occurs. In addition a description of the errors will be displayed on the LCD display inside the left cabinet.

E-1: HOME ZERO ERROR

This error occurs when the Wheel Home Sensor is continually grounded, indicating a ground in the harness or a defective Wheel Home Sensor.

E-2: HOME MAX ERROR

This error occurs when the Wheel Home Sensor never indicates that the home position on the wheel has been reached within a specified interval. This indicates either a break in the harness, a defective sensor, that the wheel is slipping excessively or not turning, or that the pin on the bottom of the wheel is not passing through the Sensor.

E-3: TICKET ERROR

This error occurs when the ticket dispenser is either jammed or out of tickets.

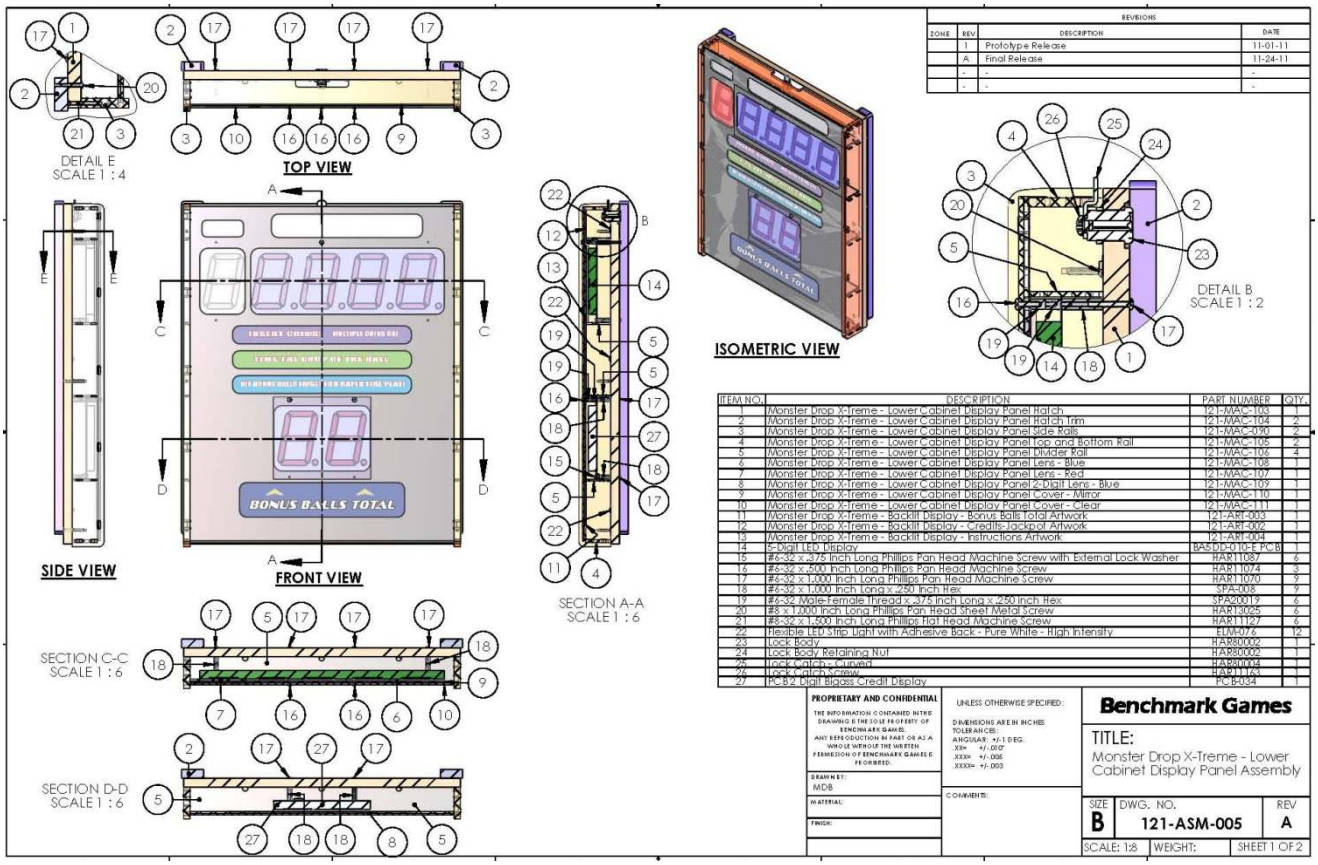
E-4: TICKET DISPENSER COMM. ERROR

This error occurs when communications cannot be established with the ticket dispenser.

Troubleshooting Guide

	Symptom-*Description of Proper Operation*	Possible Causes-*Action*	
	Balls Don't drop when 'Drop Ball' button is pressed, but Light in button is flashing and credits are available- *When button is pressed, ground is switched to the 'Drop Ball' input on the Main CPU. The CPU then switches the output for the solenoid to ground activating the solenoid. When the solenoid activates, the plunger is pulled up and out of the way of the ball.*	Switch Problem • Switch in 'Drop Ball' switch housing is loose-*secure switch in housing* Solenoid problem • Solenoid is stuck or not working-*Fix binding plunger or replace solenoid* • 12V power or ground to solenoid is not working or not connected-*fix voltage problem in harness, power supply, or power distribution board*	
	Ball Lift doesn't run and ball trough is empty- *Ball lift should run when there are less than three balls in the ball trough. The third ball blocks the trough opto which switches the corresponding input on the Main CPU to ground. When the input is grounded, the CPU assumes there are three balls staged in the trough.*	Main CPU sees a low on the input. • Check that nothing is blocking the ball trough opto sensor-*clear obstruction* • Output from ball trough opto receiver is shorted-*replace opto receiver* • CPU input for ball trough opto receiver is bad-*Replace Main CPU* • Output wire between opto receiver and CPU is shorted in harness-*find short*	
	Playfield Wheel starts and stops, game does not score accurately or game just does not score accurately- *Playfield wheel should run at a constant speed and the home opto pin located in the bottom of the wheel should pass through the home opto once per revolution. When the motor turns more times than it should between home opto triggers, the controller assumes the wheel may be stuck and slows the wheel down and tries to restart over and over.*	Friction drive problem • Check motor friction wheel contact on wheel-*fix any obstruction keeping spring from pulling motor to wheel* Wheel home sensor problem • Wheel home pin is missing or not passing through home opto-*replace or adjust pin height in wheel* • Wheel home opto sensor is not working-*replace opto or find open power or signal open in harness*	
	Ball Lift runs continuously and no balls are in ball trough or on ball lift	Ball lift ramp problem • Balls stuck in ball lift ramp-Clear any obstructions or ball hang ups in lower ramp in lower cabinet • Wrong quantity of balls in machine-Be sure that there are 9 balls per side in machine for proper operation • Balls worn small or no longer round- Replace balls	

Mechanical Drawings - Visit www.benchmarkgames.com for complete drawing set.



REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
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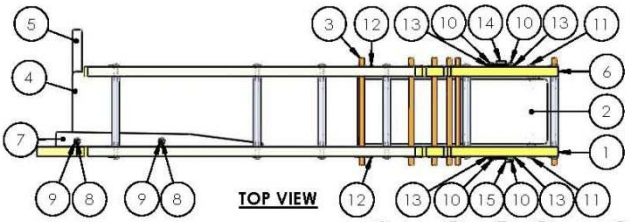
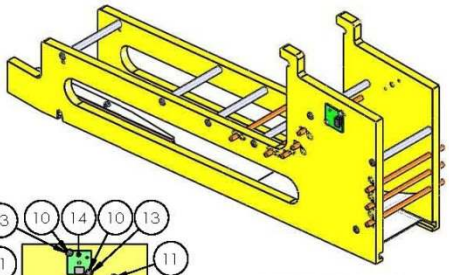
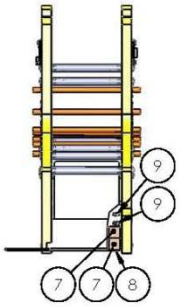
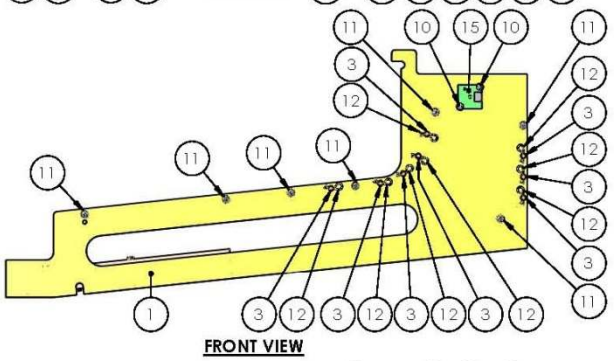
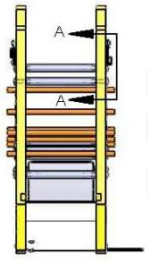
	A	Final Release	11-24-11
	-	-	-
	-	-	-

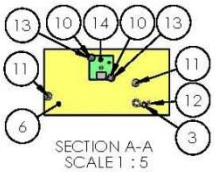




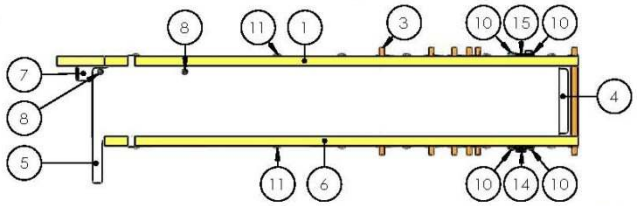


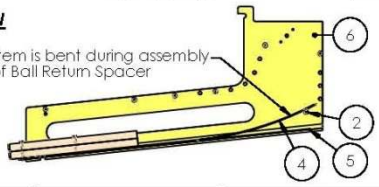






ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
1	Monster Drop X-Treme - Ball Return Side - Front	121-MAC-117	1
2	Monster Drop X-Treme - Ball Return Spacer	121-SCM-122	7
3	Monster Drop X-Treme - Ball Return Vibration Dampener	BLI-00014	8
4	Monster Drop X-Treme - Ball Return Ramp - Top - Assembled Version	121-MAC-119	1
5	Monster Drop X-Treme - Ball Return Ramp - Bottom	121-MAC-120	1
6	Monster Drop X-Treme - Ball Return Side - Back	121-MAC-118	1
7	Monster Drop X-Treme - Ball Return Ramp Lane Divider	121-MAC-121	2
8	#6-32 x 1.50 Inch Long Phillips Pan Head Machine Screw	HAR11076	2
9	#6-32 Hex Nylon-Insert Locknut	HAR36011	2
10	#8 x .500 Inch Long Phillips Pan Head Sheet Metal Screw	HAR13027	4
11	#10-32 x .750 Inch Long Phillips Pan Head Machine Screw	HAR11031	14
12	Cotter Pin - .04 Inch Diameter Wire x .188 Inch To .250 Inch	HAR60021	16
13	Nylon Spacer - .375 OD x .200 ID x .06 Thick	SPA10021	4
14	Opto Receiver	OPT-010-00-BR	1
15	Opto Transmitter	OPT-010-00-BT	1





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DRAWN BY: MDB
MATERIAL:
FINISH:

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
ANGULAR: +/-1 DEG.
.XX= +/-.010
.XXX= +/-.005
.XXXX= +/-.003
COMMENTS:

Benchmark Games

TITLE:
Monster Drop X-Treme - Ball Return Assembly

SIZE	DWG. NO.	REV
B	121-ASM-010	A

SCALE: 1:8 | WEIGHT: | SHEET 1 OF 2

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
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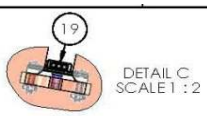
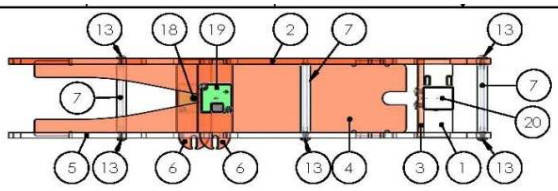
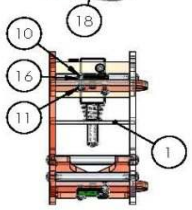
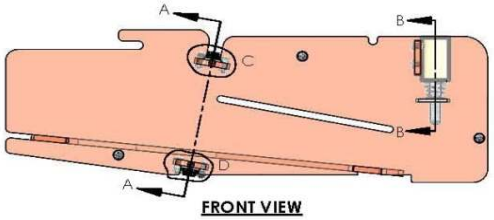
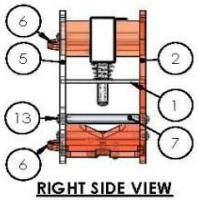
	A	Final Release	11-24-11
	-	-	-
	-	-	-

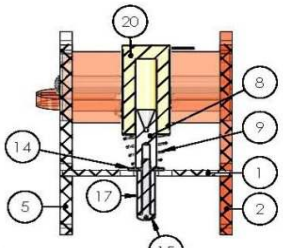


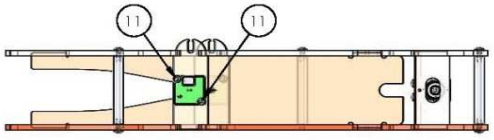


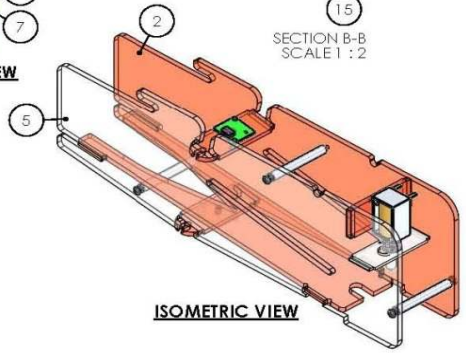




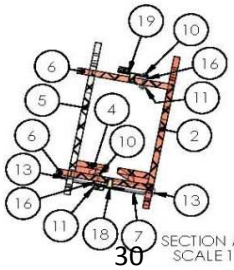








ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
1	Monster Drop X-Treme - Ball Drop Solenoid Plunger Stop	121-MAC-042	1
2	Monster Drop X-Treme - Ball Drop Side - Tinted	121-MAC-040	1
3	Monster Drop X-Treme - Ball Drop Solenoid Mount	121-MAC-043	1
4	Monster Drop X-Treme - Ball Drop Angled Ramp	121-MAC-039	1
5	Monster Drop X-Treme - Ball Drop Side - Clear	121-MAC-041	1
6	Monster Drop X-Treme - Ball Drop Opto Mount	121-MAC-044	2
7	Monster Drop X-Treme - Ball Drop Spacer	121-SCM-045	3
8	Monster Drop X-Treme - Ball Drop Solenoid Plunger	121-SCM-046	1
9	Monster Drop X-Treme - Ball Drop Solenoid Spring	SPR026	1
10	#4-40 x .625 Inch Long Phillips Pan Head Machine Screw	HAR11066	4
11	#4-40 Hex Keps Nut	HAR35007	4
12	#8-32 x .375 Inch Long Phillips Pan Head Machine Screw	HAR11101	2
13	#8-32 x .500 Inches Long Phillips Truss Head Machine Screw	HAR11094	5
14	#8 Fender Washer	HAR20008	1
15	#10-32 x 1.250 Inch Long Phillips Pan Head Machine Screw	HAR11024	1
16	Nylon Spacer - .250 OD x .125 Long x #4 Hole	SPA10015	4
17	Nylon Spacer - .375 OD x .199 ID x 1.000 Long	SPA10044	1
18	Opto Receiver	OPT-010-00-BR	1
19	Opto Transmitter	OPT-010-00-BT	1
20	Solenoid Body - OBJY2 (B1) B0309A (050)	ELM-011	1



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ANGULAR: +/-1 DEG.
.XX= +/-.010
.XXX= +/-.005
.XXXX= +/-.003
COMMENTS:

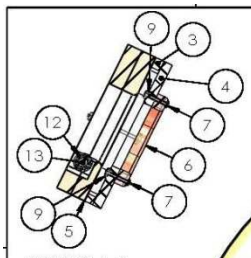
Benchmark Games

TITLE:
Monster Drop X-Treme - Ball Drop Assembly

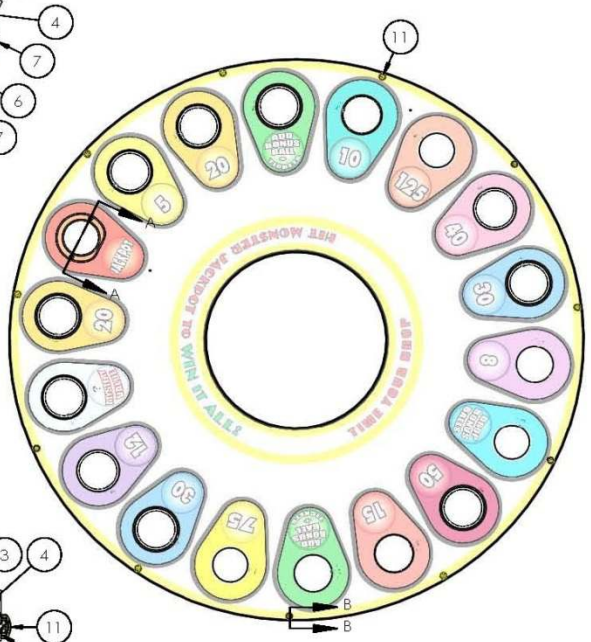
SIZE	DWG. NO.	REV
B	121-ASM-004	A

SCALE: 1:8 | WEIGHT: | SHEET 1 OF 2

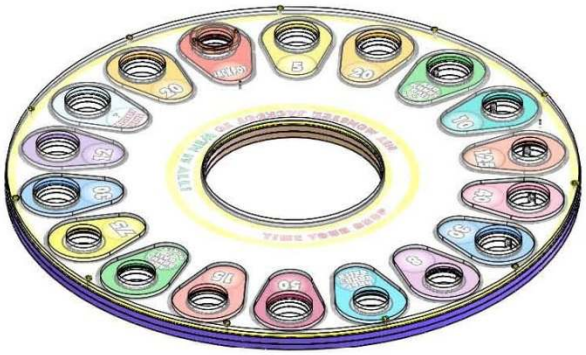
REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	1	Prototype Release	11-01-11
	A	Final Release	11-24-11
	-	-	-
	-	-	-



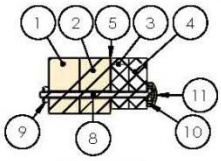
SECTION A-A
SCALE 1 : 4



TOP VIEW

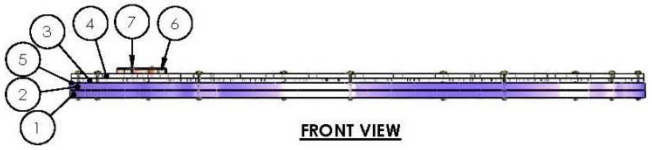


ISOMETRIC VIEW



SECTION B-B
SCALE 1 : 2

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
1	Monster Drop X-Treme - Playfield Wheel MDF - Bottom	121-MAC-152	1
2	Monster Drop X-Treme - Playfield Wheel MDF - Top	121-MAC-153	1
3	Monster Drop X-Treme - Playfield Wheel Acrylic - Bottom	121-MAC-154	1
4	Monster Drop X-Treme - Playfield Wheel Acrylic - Top	121-MAC-155	1
5	Monster Drop X-Treme - Playfield Standard Wheel Artwork	121-ART-005	1
6	Monster Drop X-Treme - Playfield Wheel Jackpot Ring	121-MAC-157	1
7	#6-32 x 1.000 Inch Long Phillips Pan Head Machine Screw	HAR11070	2
8	#6-32 x 2.250 Inch Long Phillips Pan Head Machine Screw	HAR14027	11
9	#6-32 Hex Nylon-Insert Locknut	HAR36011	13
10	#6 Decorative Screw Cap Washer	HAR90014	11
11	#6 Decorative Screw Cap - Yellow	HAR90018	11
12	Double Sealed Ball Bearing - .750 OD x .281 Wide x .250 Dia. Shaft	BRG-017	18
13	Pin .250 Dia. x 1.00 Long	099-SCM-063	18



FRONT VIEW

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TOLERANCES:
ANGULAR: +/-1 DEG.
.XX= +/-.010"
.XXX= +/-.005
.XXXX= +/-.003
COMMENTS:

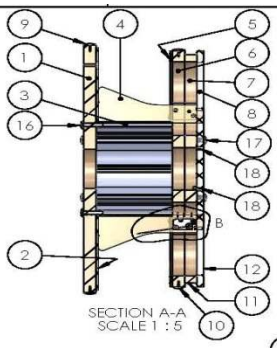
Benchmark Games

TITLE:
Monster Drop X-Treme - Playfield Wheel Assembly - Exploded View

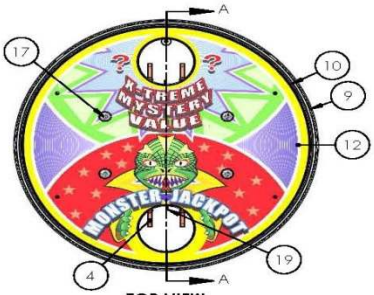
SIZE	DWG. NO.	REV
B	121-ASM-009	A

SCALE: 1:24 | WEIGHT: | SHEET 1 OF 2

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	1	Prototype Release	11-01-11
	A	Final Release	11-24-11
	-	-	-
	-	-	-

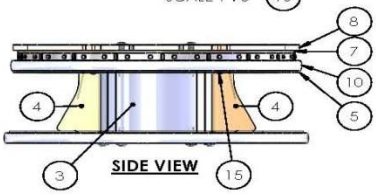


SECTION A-A
SCALE 1 : 5

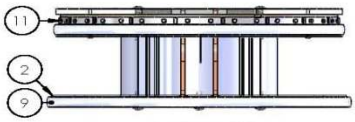


TOP VIEW

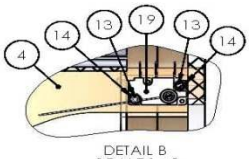
ISOMETRIC VIEW



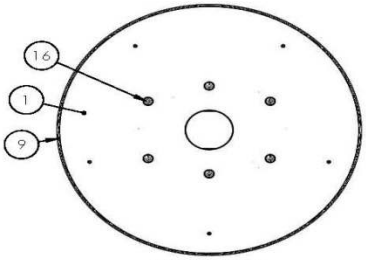
SIDE VIEW



FRONT VIEW



DETAIL B
SCALE 1 : 2



BOTTOM VIEW

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
1	Monster Drop X-Treme - Monster Bonus Mount	121-MAC-142	1
2	Monster Drop X-Treme - Monster Bonus Mount Mirror	121-MAC-143	1
3	Monster Drop X-Treme - Monster Bonus Corner Extrusion	121-MAC-144	4
4	Monster Drop X-Treme - Monster Bonus Switch Mount	121-MAC-145	4
5	Monster Drop X-Treme - Monster Bonus Top Mirror	121-MAC-146	1
6	Monster Drop X-Treme - Monster Bonus Target LED Mount	121-MAC-147	1
7	Monster Drop X-Treme - Monster Bonus Target Middle Layer	121-MAC-148	1
8	Monster Drop X-Treme - Monster Bonus Target Top	121-MAC-149	1
9	Monster Drop X-Treme - Monster Bonus Decorative Edge Moulding - Bottom	HAR00094	1
10	Monster Drop X-Treme - Monster Bonus Decorative Edge Moulding - Top	HAR00094	1
11	Monster Drop X-Treme - Monster Bonus Target LED Lighting - 18 RGB Segments	ELW-076	1
12	Monster Drop X-Treme - Monster Jackpot Artwork	121-ART-006	1
13	#4-40 x 1.000 Inch Long Phillips Flat Head Machine Screw	HAR11042	4
14	#4-40 Hex Nylon-Insert Locknut	HAR36007	4
15	#6 x .500 Inch Long Phillips Pan Head Sheet Metal Screw	HAR13019	4
16	#25-20 x 1.000 Inch Long Phillips Pan Head Machine Screw	HAR11001	6
17	#25-20 x 2.0 Inches Long Phillips Truss Head Machine Screw	HAR11003	4
18	Flexible LED Strip Light with Adhesive Back - Red	ELW-054	6
19	Trip Switch with Wire - Happ #42-9105-00	ELW-024	2

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.XXX= +/-.005
.XXXX= +/-.003
COMMENTS:

Benchmark Games

TITLE:
Monster Drop X-Treme - Monster Bonus Feature Assembly

SIZE	DWG. NO.	REV
B	121-ASM-012	A

SCALE: 1:8 | WEIGHT: | SHEET 1 OF 2